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**(54) DRY ETCHING METHOD**

(57) Abstract:

**PURPOSE:** To make it possible to perform the anisotropic etching without damages on the surface of the substrate to be treated and increase the cleanliness of the surface after etching treatment.

**CONSTITUTION:** As the base body 15 to be treated and as the reaction gas, Si substrate and XeF<sub>2</sub> are used, respectively. The base body 15 to be treated is put on the cooling mechanism 16 in the vessel 11, and cooled nearly to the temperature of liquid nitrogen. When XeF<sub>2</sub> gas is introduced into the vessel 11, it adheres on the surface of the base body 15, and forms the Si-F compound layer 21a as the result of reaction with Si surface. By irradiating a light thereto, the irradiated part of the Si-F compound layer 21a is evaporized in the gas phase, and at the same time, XeF<sub>2</sub> newly adheres on the exposed surface of Si substrate to form the Si-F compound layer 21a. By repeating the formation of the Si-F compound layer 21 and the evaporation of the compound layer 21a, the etching is progressed and the base body 15 is subjected to the selective etching.

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